

REMARKS

Claims 1, 4-10, 21-25, 29-36 and 38-44 are pending in this application, claims 2, 3, 11-20, 26-28 and 37 having been cancelled and claims 39-44 being newly added by the above amendment. Of these claims, claims 1, 2, 6, 8-10, 21-24, 27, 31-33, 35, 37 and 38 stand rejected under 35 USC §102(a) as being unpatentable over Kooijiman et al., and claims 3-5, 7, 25, 28-30, 34 and 36 stand rejected under 35 USC §103(a) as being unpatentable over Kooijiman et al.

In view of the preceding amendments and the following remarks, these rejections are traversed, and reconsideration of this application is respectfully requested.

Applicant's claimed invention is an EUV radiation source that includes a system for providing a pre-pulse laser beam and a main pulse laser beam. The pre-pulse laser beam irradiates a target to provide target conditioning and the main pulse beam subsequently irradiates the conditioned target to generate the EUV radiation. Applicant's invention is an improvement over the known EUV radiation source that employ pre-pulse and main-pulse beams because the parameters of the system are selected to increase the generation of the EUV radiation and the system efficiency.

Independent claims 1, 21 and 33 have been amended to state that the incident angle between the pre-pulse beam and the main-pulse beam is 30° or greater. Further, new independent claim 40 specifically states that the incident angle between the pre-pulse beam and the main pulse beam is 30° or greater, the pre-pulse beam has an energy of about 40 mJ and a duration of about 10 ns, and the main pulse beam has an energy of about 700 mJ and a duration of about 10 ns. Applicant respectively submits

that these parameters provide a more efficient EUV radiation source than what is provided by the prior art of record.

The article "Prepulsed Enhanced EUV Yield from a Xenon Gas-Jet Laser Produced Plasma" by G. Kooijiman et al. discloses an EUV radiation source that employs a pre-pulse beam and a main pulse beam. Kooijiman et al. specifically states in column 2 that the angle between the pre-pulse beam and the main pulse beam is 20°. Applicant submits that Kooijiman et al. does not provide any teaching as to other angles between the pre-pulse beam and the main pulse beam, or any discussion that the 20° angle can be changed or varied. Based on the amendments above, it is respectfully submitted that the §102(a) rejection is rendered moot. Therefore, Applicant respectfully submits that this rejection be withdrawn.

The Examiner has held that an angle of 30° between the pre-pulse beam and the main pulse beam is obvious in view of Kooijiman et al. because the optimum or workable ranges involve only routine skill in the art, citing *In re Aller*, 105 USPQ 233. *In re Aller* states that "a change in temperature or in concentration, or in both, would be an unpatentable modification." *In re Aller* goes on to state that "under some circumstances, however, changes such as these may impart patentability to a process if the particular range is claimed produces new and unexpected results which is different in kind and not merely in degree from the results of the prior art." *In re Aller* at 235. Applicant submits that the angle between the pre-pulse beam and the main pulse beam of 30° or greater falls into this exception of *In re Aller* because this angle produces increased EUV generation efficiency not contemplated by Kooijiman et al. Further, the difference between the angle of the pre-pulse beam and the main pulse beam requires

significant and unobvious changes in system design and configuration, and is not merely a change in temperature or composition as referred to *In re Aller*. Particularly, Applicant submits that changing the temperature or composition is a relatively minor change, whereas changing the angle of incidence between the pre-pulse beam and the main pulse beam in a EUV source requires significant modifications in the source.

Applicant submits that MPEP 2143 defines the requirements for establishing a *prima facie* case of obviousness. This section of MPEP states that there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Also, there must be a reasonable expectation of success. Further, the prior references must teach or suggest all of the claim limitations. Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness because Kooijiman et al does not teach or suggest providing an angle between the pre-pulse beam and the main pulse beam that is 30° or greater. MPEP 2143.03 states that in order to establish a *prima facie* case of obviousness, all of the claimed limitations must be taught or suggested by the prior art. Again, there is no suggesting or teaching of providing the angle between the pre-pulse beam and the main pulse beam to be 30° or greater.

New independent claim 40 also states that the pre-pulse beam has an energy of about 40 mJ and a duration of about 10 ns and the main pulse beam has an energy of about 700 mJ and a duration of about 10 ns. Applicant submits that Kooijiman et al. also does not teach or suggest these values.

In view of the preceding amendments, it is respectfully requested that the §103(a) rejection also be withdrawn.

It is now believed that this application is in condition for allowance. If the Examiner believes that personal contact with Applicant's representative would expedite prosecution of this application, he is invited to call the undersigned at his convenience.

Respectfully submitted,

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